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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

TRAN, PABLO N

ART UNIT

PAPER NUMBER

2685

DATE MAILED: 01/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/599,948

Applicant(s)

FURMIDGE, SIMON

Examiner

Pablo N. Tran

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 10 November 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-3 and 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Horie et al.* (5,568,098) in view of *Iwane* (5,212,814).

As per claims 1 and 7, *Horie et al.* disclose a transmitter for a portable radio device comprising a modulator including a switching circuit, having a first port for inputting a baseband signal and a second port for inputting a local oscillator signal to the switching circuit which provide a conductance waveform at a frequency multiple of the local oscillator signal for up-converting the baseband signal to a radio frequency modulated carrier (fig. 4-5, col. 3/ln. 1-col. 4/ln. 67).

*Horie et al.* do not explicitly disclose such controls the gain of the modular to control the output level of the modulator. However, such gain control method of the modulator is well known in the art, as disclosed by *Iwane* (fig. 2, col. 2/ln. 66-col. 4/ln. 56). Since both references disclosed such quadrature modulator, therefore it would have been obvious to one of ordinary skill in the art to provide such gain control of the

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modulator as taught by Iwane to the apparatus of *Horie et al.* to provide a constant output power.

As per claims 2 and 8, the modified systems of *Horie et al.* disclose a local oscillator signal drives the switching means at a multiple of its frequency (see *Horie et al.*, fig. 5/no. 17, col. 3/ln. 58-col. 4/ln. 67).

As per claims 3, 9, and 13-14, the modified systems of *Horie et al.* disclose means for controlling the gain of the modulator comprises current control means (see Iwane, fig. 2, col. 3/ln. 8-9).

3. Claims 4-5 and 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Horie et al.* (5,568,098) in view of Iwane (5,212,814) and further in view of *Hickman* (LTPs and active double balanced mixers, vol. 99, no. 1683, pg 126-128).

As per claims 4-5 and 10-11, the modified systems of *Horie et al.* do not specifically disclosed the transmitter having two cross-connected long tail pairs of bipolar transistors. *Hickman* disclosed such cross-connected long tail pairs of bipolar transistors. Therefore, it would have been obvious to one of ordinary skill in the art to provide cross-connected long tail pairs of bipolar transistors, as discussed in *Hickman*, to the transmitter of the modified systems of *Horie et al.* to minimized out-of-band emissions in a subsequent mixing with a carrier signal to generate a frequency modulated signal.

4. Claims 6 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Horie et al.* (5,568,098) in view of Iwane (5,212,814) and further in view of *Damgaard et al.* (6,526,265).

As per claims 6 and 12, as stated above in claim 1, the modified systems of *Horie et al.* do not explicitly disclosed the LO signal is provided at an even multiplication. However, such is well known in the art, as disclose by *Damgaard et al.* (fig. 8/no. 320, col. 11/ln. 44-55). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the reference frequency generator at even multiplication in order to expand the communication system application to have better flexibility or more versatility so that various reference frequency generators can be used for the FM transmitter systems.

### ***Response to Arguments***

5. Applicant's arguments filed 11/10/05 have been fully considered but they are not persuasive.

The Applicant stated that, "Horie et al. do not teaches or suggests means for rectifying the input local oscillator signal". In response to the Applicant, Horie disclosed such means for rectifying (fig. 5/no. 17) the LO signal.

The Applicant stated that, "Horie nor Iwane fails to teach or suggest a means for controlling the gain of the modulator thereby to control the output level of the modulator". In response to the Applicant, The combination of Horie et al. in view of Iwane teaches such means of controlling the gain of the modulator (see Iwane, col. 4/ln. 43-52, col. 6/ln. 30-34, where it is clear that the modulator output gain is controlled by the variable attenuator (fig. 2/no. 16)).

The Applicant stated that, "Horie fails to teach or suggest a means for mixing a baseband signal with a conductance waveform for up-converting the baseband signal to a radio frequency signal". In response to the Applicant, Horie et al. disclosed such means for mixing the baseband signals (I and Q signals) with the conductance signal (output signal from the frequency multiplier (fig. 5/no. 17)) to produce RF signal (SM, col. 3/ln. 61-col. 4/ln. 4).

The Applicant stated that, "the cited reference fails to teach or suggest a sub-harmonic mixer". In response to the Applicant, the limitation for which the Applicant relied upon was not cited in the claim, therefor the pre-ample was not given any patentable weight.

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

**Conclusion**

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pablo Tran whose telephone number is (571)272-7898. The examiner normal hours are 9:30 -5:00 (Monday-Friday). If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban, can be reached at (571)272-7899. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

7. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-directauspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

**PABLO N. TRAN**  
**PRIMARY EXAMINER**

January 22, 2006



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